

USTIASHVILI, A.D., professor; NADIRASHVILI, M.D.

Effect of volcanic mud from the Akhtala spa on ovarian function;  
experimental morphological and clinical findings. Akush. i gin.  
no.4:65-66 Jl-Ag '54. (MIRA 7:11)

1. Iz Nauchno-issledovatel'skogo instituta kurortologii i fizicheskikh metodov lecheniya (dir. kandidat meditsinskikh nauk V.G. Gogibedashvili) Ministerstva zdravookhraneniya Gruzinskoy SSR.

(OVARIES, effect of drugs on,  
mud ther., clin. & exper. findings)

(MUD THERAPY,  
eff. on ovaries, clin. & exper. findings)

USTIASHVILI, A.D.

[Rh factor in obstetrics] Razus-faktor v akusherstve. Tbilisi,  
Sabchotsa Sakartvelo, 1958. 18 p. (MIRA 13:8)  
(RH FACTOR)

USTICH, A.F., starshiy elektromekhanik

We need smaller electric wiring diagrams. Avtom. telen. i sviaz'  
2 no. 9:41 S '58. (MIRA 11:10)

1. Mineralovodskaya distantsiya signalizatsii i svyazi Ordzhonikidzevskoy  
dorogi.  
(Electric wiring--Diagrams)

USTICH, A.F., starshiy elektromekhanik; KNYAZEV, M.N., starshiy  
inzhener; CHEPELEVICH, M.I.

From the editors' mail. Avtom., telem. i sviaz' 5 no.3:44 Mr  
'61. (MIRA 14:9)

1. Mineralovodskaya distantsiya signalizatsii i svyazi Severo-  
Kavkazskoy dorogi (for Ustich). 2. Nadezhdinskaya distantsiya  
signalizatsii i svyazi Sverdlovskoy dorogi (for Knyazev). 3.  
Nachal'nik laboratorii signalizatsii i svyazi Litovskoy dorogi,  
(for Chepelevich).

(Railroads--Electric equipment)

(Railroads--Communication systems)

(Railroads--Signaling--Interlocking systems)

BERG, P.P.; FEYGEL'SON, B.Yu.; Prinimali uchastiye: ZASETSKIY, G.F., inzh.;  
RAKOCOV, V.G., inzh.; KUZNETSOV, Ye.I., inzh.; SKOSYREVA, A.N.,  
starshiy tekhnik; USTICHENKO, R.D., starshiy tekhnik.

Metal shell molds. Lit. proizv. no.10:32-33 0 '60. (MIRA 13:10)  
(Foundaries--Equipment and supplies)

DOLKART, F.Z.; USTICHENKO, V.A.

Combined batch for dolomite and dolomite-magnesite refractories  
with free lime. Ogneupory 25 no.11:523-525 '60. (MIRA 13:12)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.  
(Firebrick) (Binding materials)

DOLKART, F.Z. Prinimal uchastiye USTICHENKO, V.A.

Characteristics of refractory materials made of calcined dolomite on a resin base. Ogneupory 26 no.7:329-335 '61.  
(MIRA 14:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.  
(Dolomite)  
(Refractory materials)

USTILOVSKIY, S.Ya. (Moskva)

Determination of the coefficient of stress concentration using an  
electric modeling installation. Stroi.mekh. i rasch.soor. 7  
no.5:21-2/. '65. (MIRA 18:10)

VOLOSHIN, A.M., inzh.; PANFILOV, I.D., tekhnik; USTIMENKO, A.A., tekhnik

Ventilating a mine section with the collector-drift in  
the hanging wall of the ore body. Met. i gornorud. prom.  
no.4:76-77 Jl-Ag '63. (MIRA 16:11)

1. Rudnik im. Dzerzhinskogo, Krivoy Rog.

USTIMENKO, A. S.

Cand Agr Sci - (diss) "Effect of mineral nutrient and growing conditions on the productivity of above-surface and root masses of perennial grasses." Belya Tserkov', 1961. 20 pp; (Ministry of Agriculture Ukrainian SSR, Belotserkov' Agricultural Inst); 200 copies; price not given; (KL,6-61 sup, 233)

L 38043-66 IJP(m)/MT(u)/MT(l) IJP(c) WH

ACC NR: AP6023750

SOURCE CODE: UR/3149/66/000/003/0124/0134

475

AUTHOR: Ustimenko, B. M.; Ibragimov, I. I.; Burminskiy, E. P.

ORG: none

TITLE: Experimental study of temperature profiles in a swirling semiconfined turbulent jet in a concurrent flow

SOURCE: Alma-Ata. Kazakhskiy nauchno-issledovatel'skiy institut energetiki. Problemy teploenergetiki i prikladnoy teplofiziki, no. 3, 1966, 124-134

TOPIC TAGS: incompressible liquid, turbulent jet, temperature profile, velocity profile, concurrent flow, semiconfined turbulent jet

ABSTRACT: Results are presented of an experimental study of the temperature distribution in a swirling turbulent jet of an incompressible liquid propagating along a cylindrical wall both in the presence of a concurrent flow and without it. Both symmetric and asymmetric boundary conditions are considered. The effect of the parameter  $m = u_f/u_j$  (where  $u_f$  and  $u_j$  refer to the velocity of the main flow and the jet, respectively) and of the vortex on the jet boundaries, temperature profiles, and the jet attenuation intensity was determined using the previously described experimental unit (Ibragimov, I. I., Ustimenko, B. P., Izvestiya Akademii Nauk Kaz. SSR, seriya fiz.-mat.nauk, 1964, no. 2) with swirl vanes. A comparison of the experimental relative maximum temperature profiles, the excess temperature profiles,

Card 1/2

L 38843-66

ACC NR: AP6023750

and the velocity profiles in various cross sections of the jet showed the presence of flow self-modelling and a similarity in the excess temperature and velocity profiles in the jet cross sections. With increasing  $m$  parameter, the maximum excess temperature in the jet dropped rapidly and the relative thermal boundaries of the jet underwent contraction. The presence of a vortex leads to an expansion of the jet boundaries. Orig. art. has: 1 table and 11 figures. [PS]

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 007 /

Card 2/2

USTIMENKO, B. P.

"Investigation of the Aerodynamics of a Stream in a Furnace Cyclone Chamber."  
Cand Tech Sci, Power Engineering Inst, Acad Sci, Kazakh SSR, Alma-Ata, 1954.  
(RZhMekh, Nov 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher  
Educational Institutions (11)

SC: Sum. No. 521, 2 Jun 55

VULIS, L.A.; USTIMENKO, B.P.

Aerodynamic diagram of current in a cyclone chamber. Vest. AN Kazakh.  
SSR 11 no.4:89-97 Ap '54. (MLRA 7:5)  
(Aerodynamics)

USTIMENKO, B.P.

EP  
MN V 5490. AERODYNAMICS OF CYCLONE FURNACE CHAMBERS. Vulis, L.A. and  
Ustimenko, B.P. (Teploenergetika (Heat Pur Engng, Moscow), 1954, vol. 1, (9);  
S-101 Energietechnik, June 1955, vol. 5, 265-270). The aerodynamics of flow  
in cyclone furnace chambers, the movement of the jet, experimental data on the  
turbulent mixing process in the cyclone chamber and the most efficient method  
of injecting combustion air are studied. A generalized equation for flow in  
the cyclone is presented. (1). M.F.P.

USSR/Heat Engineering

AID P - 4364

Subject : USSR/Heat Engineering

Card 1/1 Pub. 110-a - 9/19

Authors : Vulis, L. A., Dr. Tech. Sci. Professor and B. P. Ustimenko, Kand. Tech. Sci. Power Institute of the Kazakh Academy of Sciences

Title : The influence of a non-isothermal field upon the flow aerodynamics in a cyclone type furnace chamber.

Periodical : Teploenergetika, 4, 36-39, Ap 1956

Abstract : The problem of applying data pertaining to the aero-dynamic properties of a cold air flow in a cyclone combustion chamber to the non-isothermal motion of a gas flow in the same type of furnace. Three diagrams. Seven Russian references, 1953-1956.

Institution : None Inst. Energetics, AS Kaz SSR

Submitted : No date

USTIMENKO, B. P.

"On Automodeling Motion of Fluid in a Weakly Twisted Stream,"  
by B. P. Ustimenko, Izvestiya Akademii Nauk Kazakh SSR, Seriya  
Energeticheskaya, No 11, 1956, pp 111-121

Work reviews previously published solutions to the problem of weakly twisted streams solved by the method of the asymptotic resolution of velocities and pressure into series along negative degrees of the radial distance from the source of the stream. It is shown that these same solutions (first approximation) may be found by the simpler automodeling solution method, i.e., the method so well-proved in nontwisting streams.

The work presents the solution to the previously uninvestigated problem of the distribution of heat in a nonisothermic, weakly twisted radial-aperture stream.

Sum 1258

SOV/124-58-7-7718

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 7, p 58 (USSR)

AUTHOR: Ustimenko, B.P.

TITLE: On the Self-similar Motion of Liquid in a Slightly Twisted Jet  
(Ob avtomodel'nom dvizhenii zhidkosti v slabozakruchennoy  
struye)

PERIODICAL: Izv. AN KazSSR. Ser. energ., 1956, Nr 11, pp 111-121

ABSTRACT: The author describes the existing solutions of the diffusion of twisted axial and radially-slot-shaped jets in a space containing the same liquid and directs his attention to the self-evident fact that the first terms of the asymptotic expansions of the solutions according to the inverse powers of the distances from the source correspond to the so-called self-similar motions. At the end of the article the solutions of the corresponding nonisothermal problems and the well-known fact of the similarity of the velocity and the excess-temperature fields, when the value of the Prandtl number is equal to unity, are confirmed.

1. Liquids--Motion    2. Jets--Properties    L.G. Loytsyanskiy  
3. Mathematics--Applications

Card 1/1

USTIMENKO, B.F.

5(1) 6.3+6 PHASE I BOOK EXPLOITATION

SOV/1659

Akademiya nauk Kazakhskoy SSSR, Alma-Ata

Issledovaniye fizicheskikh osnov rabochego protsessa topok i pechey  
(Investigation of the Physical Bases of Operational Processes of  
Combustion Chambers and Furnaces) Alma-Ata, Izdat AN Kazakhskoy  
SSR, 1957. 369 p. 800 copies printed.

Additional Sponsoring Agency: Alma-Ata. Kazakhskiy gosudarstvennyy  
universitet im. S.M. Kirova.

Ed. (Title page): L.A. Vulis, Doctor of Technical Sciences, Professor;  
Ed. (Inside book): D.M. Glazyrina; Tech. Ed.: Z.P. Rorokina.

PURPOSE: This book is intended for a wide circle of scientists and  
industrial engineers.

COVERAGE: The twenty-nine articles of this collection report on  
experimental and theoretical investigations of different physical

Card 1/7

Investigation of the Physical (Cont.)

SOV/1659

phenomena which constitute an integral part of the complex operational processes of modern combustion engineering equipment, and also, the entire process applicable to different types of burners and furnaces (cyclone combustion chambers, muffle burners, burners with automatic stokers, etc.). Articles in Part I treat laminar and turbulent jets of liquids and compressible gas. Part II reviews methods of modeling combustion processes (light, hydraulic and electrical), enthalpy, temperature measurement, calorimetry, etc. Part III relates to different problems and theories of fuel combustion and special operational features of combustion and furnace equipment. No personalities are mentioned.

TABLE OF CONTENTS:

Foreword	3
From the Editor	5
Card 2/7	

## Investigation of the Physical (Cont.)

SOV/1659

## PART I. THE AERODYNAMICS OF JET FLOW

Vulis, L.A. Jet-flow Problems of Gas Dynamics	15
Kashkarov, B.P. Some Accurate Solutions in the Theory of Incompressible Liquid Jets	54
<u>Ustimenko, B.P.</u> The Investigation of Slightly Involute Jets	64
Vulis, L.A., V.P. Kashkarov, and T.P. Leon't'yeva. Investigation of Complex Turbulent Jet Flows	86
Vulis, L.A., and S.I. Isatayev. Turbulent Flow of an Incompressible Liquid in the Wake of a Poorly-streamlined Body	112
Terekhina, N.N. Propagation of a Free Turbulent Gas Jet	125
Vulis, L.A., T.K. Mironenko, and N.N. Terekhina. Approximate Calculation of Speed and Temperature Distribution in Free Turbulent Jets of Compressible Gas	148

Card 3/7

Investigation of the Physical (Cont.)	SOV/1659
Kashkarov, V.P. The Question of the Flat Boundary of a Com- pressible Gas Jet	166
Bukhman, S.V., and A.P. Chernov. The Investigation of Two- Phase Free Jets	175
<b>PART II. METHODS OF INVESTIGATION AND MEASURING</b>	
Vulis, L.A., and V.G. Klinger. Investigating Radiant Energy Exchange by a Method Employing Light Models	193
Klinger, V.G. Experimental Investigation of Radiant Energy Exchange by an Method Employing Light Models	211
Vulis, L.A. The Use of Hydro Integrators [Hydrodynamic and Hydrostatic Integrators] in the Solutions of Some Prac- tical Problems	223
Potseluyko, V.A., and A.T. Trofimenko. The Investigation of a Temperature Field by the Electrothermal Analogy Method	242

Card 4/7

Investigation of the Physical (Cont.)	SOV/1659
Vulis, L.A., N.D. Kovov, and V.A. Potseluyko. Determining the Heat Constants of Poor Heat Conductors	252
Ydowenko, M.I., and V.V. Favoraskiy. The Temperature Characteristics of Some Kazakhstan Coal Ashes	279
Kovov, N.D. Some Methods of Determining the Diffusion Coefficient of Gases	285
Kovov, N.D. The Temperature Dependency of the Diffusion Coefficient of Gases	291
Basina, I.P. Methods of Measuring Flame Temperatures in Smelting Furnaces	297
Vulis, L.A., and N.D. Kovov. A New Method of Calorimetric Measurement	311

Card 5/7

## Investigation of the Physical (Cont.)

SOV/1659

## PART III. COMBUSTION. COMBUSTION CHAMBERS AND FURNACES

Vulis, L.A. Synopsis of the Elementary Theory of Heat Conditions During Combustion	321
Favorskiy, V.V. Some Special Features of Ash Coal Combustion	345
Reznyakov, A.B. The Burning of a Pulverized-Coal Flame	361
Leont'yeva, T.P. The Aerodynamics of a Muffle Burner	380
Vulis, L.A., and B.P. Ustimenko. Investigation of the Aerodynamics of a Cyclone Combustion Chamber	389
Tonkonogiy, A.V., and I.P. Basina. The Burning and Separation of Fuel Particles in a Cyclone Combustion Chamber	407
Teplitskiy, M.G. The Sharp Blast in Combustion Chambers	420
Tonkonogiy, A.V. The Choice of Burners for Reverberatory Copper-Smelting Furnaces	428

Card 6/7

Investigation of the Physical (Cont.)	sov/1659
Tonkonogiy, A.V., and I.P. Basina. The Burning of Coal With a High Content of Ash in a Cyclone Combustion Chamber	447
Favorskiy, V.V. Some Results of the Study of Working Princi- ples of Combustion Chambers With Stoker Grates	457
Supplement (From the Editor)	468
AVAILABLE: Library of Congress	

Card 7/7

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SOV/110-59-4-6547

8(6)

Translation from: Referativnyy zhurnal. Elektritekhnika, 1959, No. 4, p. 21 (USSR)

AUTHOR: Valis, L. A., and Ustimenko, B. P.

TITLE: Investigation of the Aerodynamics of a Cyclone Combustor

PERIODICAL: V sb.: Issled. fiz. osnov. rabochego protsessa topk i pechey.

Alma-Ata, AS Kazakhskaya SSR, 1957, pp 389-405

ABSTRACT: A theoretical and experimental investigation of the aerodynamics of a cyclone combustor has been made on cold models of a cyclone furnace. Chief attention was paid to the movement of a single-phase gas stream; a scheme of jet motion is presented. Experiments are described on two models with different values of parameters; mixing the air admitted through the cyclone inlet and mixing the air dragged into the combustor through the outlet by reverse currents has been studied. On the basis of the results obtained, an approximate analytical solution of the turbulent mixing in the combustor is offered. The problem of rational air admission is considered. An increase in the number of tangential air inlets situated along the combustor perimeter sharply decreases

Card 1/2

SOV/117-59-4-6517

**Investigation of the Aerodynamics of a Cyclone Combustor**

the combustor resistance and raises the relative vortexing (the ratio of the tangential speed in the combustor to the inlet speed). Thus, when the inlet speed changes from 134 m/sec (air admission through one nozzle) to 43 m/sec (air admission through four nozzles), the total combustor resistance drops to less than one-third (from 1,640 to 520 mm water column); the absolute value of the tangential speed even slightly increases. The possibility of extending the results of cold aerodynamic blowouts of the cyclone chamber over to non-isothermic motion of the gas stream in a real combustor is analyzed; the influence of gas-temperature variation at the cyclone entrance upon the axial and circular speed components is evaluated, as well as the influence of the temperature cross gradient in the cyclone upon the above components. The data in the article can be used both for designing cyclone combustors and for developing a theory and method for computing the working process.

S. M. Sh.

Card 2/2

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S/123/59/000/007/014/014  
A004/A00111.7430  
26.2/35  
p. 355, # 27250

Translation from: Referativnyy zhurnal. Mashinostroyeniye, 1959, No. 7,

AUTHORS:

Yulis, L.A., Ustimenko, B.P.

TITLE:

Investigating the Aerodynamics of Cyclone Combustion Chambers

PERIODICAL: V sb.: Issled. fiz. osnov. rabochego protsessa topok i pechey.

Alma-Ata. AN KazSSR, 1957, pp. 389 - 406

TEXT: The explanation of the phenomenon of the gas flow motion in the cyclone chamber is based on the idea of a rotating turbulent hollow jet. Such a jet, with a border layer directed to the chamber axis, drains masses of air, which flow into the zone of reverse currents, and puts them into rotation. The intensive turbulent mixing within the inner zone of the chamber can be assumed as the basis of the mechanism of motion. The origination of an axial zone of reverse currents can be explained by the turbulent exchange of the moments of momentum, which causes a pressure drop over the length of the chamber. This conception was confirmed by experiments *✓*

Card 1/3

83645  
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A004/A001

Investigating the Aerodynamics of Cyclone Combustion Chambers

made on two cold models of the cyclone chamber in order to study the mixing of the main and the counter air flow brought into the chamber by reverse currents. The tests proved the presence of a self-simulating motion in the temperature field. The nature of the relative temperature change in the cross-section of the cyclone is similar to the profile of excess temperature in the free turbulent jet. The diagrams of the lines of constant concentration of the primary air present a descriptive picture of the mixing of the basic and counter flow of air. They make it possible to evaluate the effect of the various structural changes and to obtain an idea of the fire operation of the chamber. The authors found an approximate analytical solution which corresponds to the accepted physical layout and, regarding the quality, reflects the structure of the flow correctly. During the experiments the authors detected the favorable effect of air inputs, distributed along the perimeter of the chamber, since, if the number of tangential inputs is increased, the resistance of the chamber drops abruptly and the relative vortex within the chamber grows. An analysis of the effect of the anisothermal property of the temperature field on the flow aerodynamics in the chamber shows an increase in the axial component ✓

Card 2/3

83645

S/123/59/000/007/014/014  
A004/A001

Investigating the Aerodynamics of Cyclone Combustion Chambers

and the invariability of the tangential component of speed relative to any cross-section of the chamber, and the comparatively insignificant effect, under concrete cyclone conditions, of the transverse temperature gradient on the relative speed profile.

Sh.Yu.V.

Translator's note: This is the full translation of the original Russian *4*  
abstract.

Card 3/3

USTIMENKO, B. P., and Vulis, L. A.,

"On the Aerodynamics of the Cyclonic Furnace Chamber," Aerodynamic and Heat Transfer Problems in Boiler and Furnace Processes; A Collection of Articles, Moscow, Gosenergoizdat, Moscow, 1958. 329 p.

Purpose: The book is intended for engineers and combustion specialists concerned with the design and operation of heating equipment and it is also for scientific workers and students of vtuzes.

Sovetskoye po prikladnoy gazovoy dinamike. Alma-Ata, 1956.

Trudy Sovetskoye po prikladnoy gazovoy dinamike, 6. Alma-Ata, 23-26 oktyabrya 1956 g. (transliteration of the Conference on Applied Gas Dynamics, Oct. 23-26, 1956) Alma-Ata, 23-26 October 1956) Alma-Ata, Ed. by M. Kazarshayev SSSR, 1959. 253 p. Errata slip inserted. 900 copies printed.

Sponsoring Agency: Akademiya nauk Kazakhskoy SSR. Kazakhskiy gosudarstvenny universitet imeni S.M. Kirova.

Editorial Board, Head, Ed.: I.A. Vultis; V.P. Kuchkarov; T.P. Leont'yeva and B.P. Ustremko. Ed.: V.V. Al'ksandrovskiy. Tech. Ed.: Z.P. Korolik.

PURPOSE: This book is intended for personnel of scientific research institutes and industrial engineers in the field of applied fluid mechanics, and may be of interest to students of advanced courses in the field.

Transactions of the Conference (Cont.)

SOV/5290

CONFERENCE: The book consists of the transcriptions of 31 papers read at the conference on gas dynamics which was convened under the initiative of the Kazakhstan Scientific Society (Kazakh State University, Institute of Energetika Akademii Nauk Kazakhstan SSR, Institute of Power Engineering of the Academy of Sciences Kazakhstan SSR) and held October 23-26, 1956. Three branches of applied gas dynamics were discussed, namely: jet flow of liquids and gases, aerodynamics of surface processes, and the outflow of liquids. The practical significance of the "Transactions" of the conference consists in the adaptation of theory to methods of technical computation and measurement methods related to industrial furnaces and other industrial processes in which aerodynamic phenomena play a predominant role. Eight papers read at the conference are not included in this collection for various reasons. The authors of the missing papers are: L.D. Utev (thermal and hydrodynamic characteristics of pulverized coal flame burners) and A.A. Golevskiy (outlines of Physical Models of the Jet Motion Mechanics of Fluids). N.I. Akatov, Ye. P. Ruzakov, S.V. Baskakov, T.K. Mironenko, A.B. Berezinov, I.G. Loyayev, and G.V. Yablonov, mentioned as being in charge of a department of the Kazakhstan State University, and I.D. Makulov, Candidate of Physical and Mathematical Sciences, Doctor, as a member of the same university. References are found at the end of

Session of October 26, 1956 (Partire)

Antonova, G.S. Investigating Turbulence Characteristics of a Free Radiosonic Jet and an Open Flame. 45  
Kuchkarov, V.P. [Candidate of Physical and Mathematical Sciences], On Parallel and Contrary Motion of Two Uniform Flows of Compressible Gas. 55

Transactions of the Conference (Cont.)

SOV/5290

Leont'yeva, T.P. [Candidate of Technical Sciences], Generation of Axially Symmetrical Jets in Parallel and Contrary Flows. 67  
Sukhanov, S.V. Regularity of Motion and Combustion of Coal Particles. 69  
Kazarshayev, M.M., and F.I. Pol'skiy. On the Criteria for the Viscous Flow of Gas in a Pure Parallel Channel. 69  
Contents of the Discussion in Brief. 73

Session of October 26, 1956 (Partire)

Pretkina, M.F. Expansion of an Axially Symmetrical Jet of Gas in a Medium of Different Density. 71  
Chebyshev, P.V. [Kazakhstan Electrotechnical Institute (All-USSR Electrotechnical Institute), I.I. Petrov Research Center, Ed.]: The Use in Investigating Porosometric Gas Flows. 75

Card 5/4

Transactions of the Conference (Cont.) SOV/5590  
 Trofimov, A.T. Investigating a Jeonstricted Turbulent Jet 159  
 Kostom, N.I. Survey of the Works of the Department of Hydromechanics of the Leningrad Polytechnical Institute Ireni Kalinin  
 on the Jet Theory 167  
 Shepelev, S.Y., and S. Tasy. Plane Jet in a Cross Section of an  
 Air Conduit 168  
 Bespalova, V.G. Use of Hydrointegrators For Solving Jet Problems 115  
 Bespalova, V.G. Use of Hydrointegrators For Solving Jet Problems 122  
 Contents of the Discussion in Brief

Session of October 25, 1956 (Morning)

Kostom, N.I. [Candidate of Technical Sciences; Docent; Faculty of  
 Metallurgical Institut; Ireni Poluninov, Leningrad (central Turbine and  
 Boiler Institute Ireni Poluninov, Leningrad).  
 Some Problems of the Aerodynamics of Furnace Cyclone Chambers and of the  
 Combustion of Coal Powder Pulverized Coal

Card 6/7

Transactions of the Conference (Cont.) SOV/5590  
 El'stremo, I.P. Candidate of Technical Sciences; Faculty of  
 Metallurgical Jet and of a Cyclone Chamber 234  
 Volov, Ye. V. Some Aerodynamic Problems of a Two-Phase Flow in  
 a Cyclone Furnace 242  
 Tsvetkov, A.V., and I.P. Basina. On the Problems of the Working  
 Process in a Cyclone Chamber 152  
 Tsvetkov, G.V. Generalizing Aerodynamic Laws of Cyclone Chambers 153  
 Contents of the Discussion in Brief

Session of October 26, 1956 (Evening)

Bogolyubov, A.Z. [Doctor of Technical Sciences; Institut energetiki  
 (Institute of Power Engineering)]. Uniform Flare of Pulverized Coal 163  
 Tsvetkov, A.S. Regularities of Gas Flare Burning 171  
 Fominov, Ye. P. On the Thermal Regime of the Gasification Process 156  
 Contents of the Discussion in Brief

Final Session, October 30, 1956  
 Chubarev, P. Zh. Candidate of Technical Sciences; Doctor [ ].  
 Survey of Work on Hydromechanics Done by the Institute of the  
 Polytechnical Institute Ireni Kirova, Sverdlovsk (Central  
 Polytechnical Institute Ireni Kirova, Sverdlovsk). In Industrial  
 Testing of New Gas Heats of Open Hearth Furnaces 175  
 Fominov, Ye. P. On the Thermal Regime of the Gasification Process 156  
 Contents of the Discussion in Brief

Card 7/9

Transactions of the Conference (Cont.) SOV/5590  
 Yerbin, Sh. A. Aerodynamics of a Turbulent Gas Flare 262  
 Polikar, E. I. [Candidate of Technical Sciences; Graduate  
 Polytechnical Institute Ireni Kirova, Sverdlovsk (Central  
 Polytechnical Institute Ireni Kirova, Sverdlovsk)]. In Industrial  
 Testing of New Gas Heats of Open Hearth Furnaces 175  
 Fominov, Ye. P. On the Thermal Regime of the Gasification Process 156  
 Contents of the Discussion in Brief

Chubarev, P. Zh. Candidate of Technical Sciences; Doctor [ ].  
 Survey of Work on Hydromechanics Done by the Institute of the  
 Polytechnical Institute Ireni Kirova, Sverdlovsk (Central  
 Polytechnical Institute Ireni Kirova, Sverdlovsk). In Industrial  
 Testing of New Gas Heats of Open Hearth Furnaces 175  
 Fominov, Ye. P. (continued). Some Problems of the Thermal Regime  
 in Rail Furnaces. Continuation 177

Card 8/9

U.S. TIME & MONEY, B.P.

SOY/2271

PHASE I BOOK EXPLOITATION  
 10(2) Sovetskaniye po prikladnoy gosrovoi dinamike. Alma-Ata, 1956  
 Trudy (Transactions of the Conference on Applied Gas Dynamics) Alma-Ata, Izd-vo AN Kazakhskoy SSR, 1959. 235 p. Errata slip inserted.  
 Supporting Agency: Kazakhstani Gosudarstvenny universitet imeni S.N. Kirova.  
 Ed.: V.V. Aleksandrovskiy, Tech. Ed.: Z.P. Ronzhina; Editorial Board: L.A. Yulis (Resp. Ed.), V.P. Kashkarov, T.P. Lantyseva, and S.P. Ustimenko.

PURPOSE: This book should be of interest to scientists and engineers working on problems of applied gas dynamics and may be of use to students.

COVERAGE: This book presents reports and brief summaries of the discussions which took place at the Conference on Applied Gas Dynamics in Alma-Ata in October 1956. The Conference was subdivided into three areas of applied gas dynamics: jet flows of fluids and gases, the aerodynamics of heating processes, and the discharge of a fluid. The practical value of the Conference transactions lies in the fact that they consist in the development of theory, methods of technical application and methods for systematic measurement applied to heating, furnace, and other industrial processes for which, in most cases, aerodynamic phenomena are decisive factors.

Akhatov, M.I.: Survey of Articles on Jet Theory by the Chair of Hydro- and Aerodynamics of the Leningrad Polytechnical Institute 107

Izneni M.I. Kalinin Shepely, S.P., and S. Tsey: Two-dimensional Jet in the Cross Section of an Air Duct 108

Shepely, S.P.: Use of Hydrodynamic Calculating Machines for the Solution of Jet Problems 115

Briefer Summary of the Discussions 122

Session of October 25, 1956 (morning)

Kazan'liyev, B.D.: Some Problems in the Aerodynamics of Cylindrical Combustion Chambers and the Combustion of Coal Dust 123

Abdul'ev, B.P.: Aerodynamics of Twisted Jets and Cylones 134 (6)

VULIS, L.A., prof., doktor tekhn.nauk, otv.red.; KASHKAROV, V.P., kand. fiziko-matemat.nauk, red.; LEONT'YEVA, T.P., kand.tekhn.nauk, red.; USTIMENKO, B.P., kand.tekhn.nauk, red.; ALEXANDRITSKIY, V.V., red.; ROHOKINA, Z.P., tekhn.red.

[Proceedings of the Conference on Applied Gas Dynamics] Trudy Soveshchaniia po prikladnoi gazovoi dinamike. Alma-Ata, Izd-vo Akad.nauk KazSSR, 1959. 233 p. (MIRA 12:6)

1. Soveshchaniye po prikladnoy gazovoy dinamike. Alma-Ata, 1956.
2. Kazakhskiy gosudarstvennyy universitet im. Kirova; Institut energetiki AN KazSSR, G.Alma-Ata (for Vulis).  
(Aerodynamics)

WILLIS, L.A.; USTINENKO, B.P.

Calculating heat transfer to liquid metals. Izv. AN Kazakh. SSR.  
Ser. energet. no.2:102-110 '59. (MIRA 12:2)  
(Heat transmission) (Liquid metals)

USTIMENKO, B. P., BESPALOVA, V. G., VULIS, L. A. (Alma-Ata)

"Liquid-Flow Analogy in the Treatment of Problems Concerning the  
Propagation of Turbulent Jets."

report presented at the First All-Union Congress on Theoretical and Applied  
Mechanics, Moscow, 27 Jan - 3 Feb 1960.

ARTYUKH, L.; VULIS, L.A.; USTIMENKO, B.P.

Hydrodynamic theory of heat transfer applied to  
liquids with small Prandtl numbers. Izv.AN Kazakh.  
SSR Ser.energ. no.2:76-89 '60. (MIRA 13:?)  
(Hydrodynamics) (Heat--Transmission)

10 1200

26.2/60

AUTHOR: Ustimenko, B.P.

TITLE: Investigation of plane turbulent jets with a complicated initial profile of velocities

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 8, 1961, 33-34, abstract 8B208  
("Izv. AN KazSSR. Ser. energ.", 1960, no. 2 (18), 68-83, Kazakh.  
summary)

TEXT: The author describes the results of an experimental and theoretical investigation of: 1) a plane turbulent jet outflowing from a nozzle of finite dimensions, 2) a composite plane jet consisting of two finite parallel jets of different velocities, and 3) two parallel plane jets at various separations between them. The theoretical analysis of propagation of plane jets is based on the using of equation of motion (or heat transfer) of the type of heat conductivity equation. Solutions of this equation are derived for the types of jet flows mentioned above. The sketch of an experimental installation and the method of measurements are described. To obtain a plane jet with uniform distribution of velocities at outlet, a profiled nozzle with 11-fold compression was applied. The

Card 1/2

28373  
3/124/61/000/008/017/042  
A001/A101

25373  
S/124/61/000/008/017/042  
A001/A101

Investigation of plane turbulent jets ...

air supplied by a fan could be heated with an electric heater. During the experiments the magnitudes of dynamical pressure and temperature in jets were measured. Dynamical pressure was measured with a Pitot tube with inner diameter 0.5 mm. Temperature was measured with a nichrome-constantan thermocouple. The author presents the measured profiles of relative velocities in different sections of the jets, which make it possible to judge on the structure of plane jets of finite dimensions with a complicated profile of velocities at the outlet from the nozzle. He shows the possibility of employing, for calculations of jets, differential equations of the type of equation of heat conductivity, if an empirical formula is used for transfer coefficient. There are 6 references.

Yu. Dityakin

[Abstracter's note: Complete translation]

Card 2/2

35748  
S/124/62/000/u03/u23/052  
D237/D301

21.1000

11.3900  
AUTHOR:

Ustimenko, B.P.

TITLE: Heat transfer to liquid metals under the conditions of  
the inner problem

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 3, 1962, 93,  
abstract 3B583 (Tr. in-ta energ. AN KazSSR, 1960,  
252 - 260)

TEXT: Utilizing the fact that for low Prandtl No's characteristic  
for liquid metal heat transfer media the thickness of the thermal  
boundary layer exceeds the thickness of the dynamical layer by many  
times, the author simplifies the equations of heat transfer in a  
circular tube, i.e. he assumes a homogeneous velocity field, and  
neglects longitudinal heat transfer as opposed to the transverse  
one. The resulting equation is analogous to that of heat conduction  
in the rigid, circular, infinite cylinder, whose solution is known.  
In this approximate formulation, profiles of relative temperatures,  
the length of the section in which heat transfer stabilizes and va-  
lues for the Nusselt No. are obtained. Comparisons are made of the  
Card 1/2

Heat transfer to liquid metals ...

S/124/62/030/003/023/052  
D237/D301

obtained approximate results, with those obtained by other authors.  
[Abstractor's note: Complete translation].

Card 2/2

✓

USTIMENKO, B. P., BARLYBAYEV, K. A., BUKHMAN, S. V., and ZHURGENBAYEV, K. A.

"Some Problems of Heat Transfer by Convection in an Incompressible Liquid (internal Problem)."

Report submitted for the Conference on Heat and Mass Transfer,  
Minsk, BSSR, June 1961.

USTIMENKO, B. P., VULIS, L. A., LEONT'YEVA, T. P., PALATNIK, I. B., and  
SAKINOV, Z. B.

"Thermal Problems of a Free (stream) Turbulent Boundary Layer."

Report submitted for the Conference on Heat and Mass Transfer,  
Minsk, BSSR, June 1961.

USTIMENKO, B. P., ZHURGENBAYEV, K. A., BUKHMAN, S. V. and BARYLYVAYEV, KH. A.

"Several problems of convective heat-exchange in non-compressed fluid (internal problem)."

Report presented at the 1st All-Union Conference on Heat- and Mass- Exchange, Minsk, BSSR, 5-9 June 1961

USTIMENKO, B. P.; SAKIPOV, L. B.; PALATNIK, I.B.; LEONT'EVA, T. P.

"Thermal Problem of a Free (Jet) Turbulent Boundary Layer"

Report presented at the Conference on heat and Mass Transfer.  
Minsk, USSR, 5-10 June 61

General problem of heat and Mass transfer are discussed and method of solution of heat and dynamic problems of stream flows is given in this paper. New experimental data for cold, low-heated flat and axis-symmetrical streams are presented.

USTIMENKO, B. P.

"Some Problems of heat Transfer by Convection  
in an Incompressible Liquid (Internal problem)"

Report presented at the Conference on heat and Mass Transfer.  
Minsk, USSR, 5-10 June 61

The results of theoretical calculation and experimental investigations of hydrodynamics and heat transfer at a forced flow of incompressible liquids in channels are presented in the paper. Besides theoretical and experimental investigations the given problem was also solved with the help of the system of the analytical integrator of the Lukyanov system.

BARLYBAYEV, Kh.A.; BUKHMAN, S.V.; ZHURGEMBAYEV, K.A.; USTIMENKO, B.P.;  
ATENKOV, S., tekhn. red.

[Some aspects of convective heat transfer in an incompressible fluid (internal problem); Conference on Heat and Mass Transfer, Minsk, January 23-27, 1961] Nekotorye voprosy konvektivnogo teploobmena v neszhimaemoi zhidkosti (vnutrenniaia zadacha); soveshchanie po teplo-i massoobmenu, g. Minsk, 23-27 ianvaria 1961 g. Minsk, 1961. 17 p. (MIRA 15:2)  
(Heat-Convection) (Hydrodynamics)

S/137/62/000/007/035/072  
A057/A101

AUTHORS: Zmeykov, V. N., Ustimenko, B. P.

TITLE: Investigation of the heat emission to mercury in the transition range under conditions of the inner problem

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 7, 1962, 9, abstract 7149  
("Tr. In-ta energ. AN KazSSR", 1961, 3, 147 - 155)

TEXT: The heat emission of technical Hg was investigated in the transition zone from laminar to turbulent movement ( $300 \leq Re \leq 25,000$ ) in cylindrical tubes of stainless steel (diameter 1.5 mm, ratio length to diameter  $l/d = 100$ ) and of Cu (diameter 2 mm,  $l/d = 75$ ). The investigation was carried out based on a method which allowed the elimination of the measurement of the temperature drop between the inner surface of the heat exchanger and the heat carrier, by a preliminary calibration of the device with water. It was observed that the Nusselt number  $Nu$  decreases sharply with a decrease of the Peclet number  $Pe$  down to values which are smaller than boundary values for laminar conditions. Such a drop is explained by heterogeneity of the heat carriers. The form of the function ✓

Card 1/2

Investigation of the...

S/137/62/000/007/035/072  
A057/A101

$\text{NuPr}^{-1/3} \times (\mu/\mu_w)^{0.14} = f(\text{Re})$  for Hg is analogous to the function for common liquids. There are 11 references.

L. Bystrov

[Abstracter's note: Complete translation]

Card 2/2

LEONT'YEVA, T.P.; USTIMENKO, B.P.

Studying the aerodynamics of a plane flow in a uniform opposing jet. Study Inst.energ. AN Kazakh.SSR 3:156-166 '61.

(MIRA 14:12)

(Aerodynamics)

26.5200

44657  
S/196/63/000/001/020/035  
E073/E435

AUTHORS: Ustimenko, B.P., Zhurgembayev, K.A.

TITLE: Application of a hydraulic integrator for calculating the convective heat exchange under conditions of the internal problem

PERIODICAL: Referativnyy zhurnal, Elektrotehnika i energetika, no.1, 1963, 4, abstract 1 G21. (Izv. AN KazSSR. Ser. energ. no.1(21), 1962, 95-108, Kaz. summary)

TEXT: The results are described of work on applying the hydrodynamic integrator for calculating the convective heat exchange under conditions of the internal problem. Particular attention is paid to evolving the theory of the instrument. The solution is described of the problem of heat exchange in plane and circular channels for the case of a constant velocity profile ( $w = w_{cp}$ ) and for the case of a laminar flow of the liquid. For boundary conditions were taken either  $q_n = \text{const}$  or  $\theta_n = \text{const}$  where  $\theta_n = t = (t - t_n)/(t_0 - t_n)$ ,  $t$  - temperature of the flow,  $t_w$  - wall temperature. The results of calculations on a hydro-integrator showed good agreement with the available analytical

Card 1/2

Application of a hydraulic ...

S/196/63/000/001/020/035  
E073/E435

solutions. It is shown that for the same boundary conditions the heat exchange intensifies on transition to a more blunt velocity profile. For a given value of the velocity profile larger Nu numbers will be obtained for the boundary condition  $q_n = \text{const.}$  The results of solutions of the problems of heat exchange in channels of a complicated configuration as well as of the heat exchange under turbulent flow conditions will be published later. 9 references.

[Abstractor's note: Complete translation.]

Card 2/2

USTIMENKO, B. P.

Research into the Mechanics of Liquids and Gases Conducted by the Thermo-physical Laboratory of KAZAKH State University imeni S. M. KIROV.  
p. 129

TRANSACTIONS OF THE 2ND REPUBLICAN CONFERENCE ON MATHEMATICS AND MECHANICS  
("TRUDY VTOROY RESPUBLIKANSKoy KONFERENCIISII PO MATEMATIKE I MEKhanIKE"), 184  
pages, published by the Publishing House of the AS KAZAKH SSR, ALMA-ATA, USSR, 1962

USTIMENKO, B. P.; ZHURGEMBAYEV, K. A.: NUSUPBEKOVA, D. A.

"The calculation of convective heat transfer of an incompressible liquid in complex-configuration channels."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12 May 1964.

Power Inst, AS KazSSR.

ZEMIKOV, V. N.; USTIMENKO, B. P.

"Hydrodynamics and heat transfer of rotating flow between two coaxial cylinders."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12  
May 64.

Power Inst, AS KazSSR.

ZMEYKOV, V.N.; KEL'MANSON, I.A.; USTIMENKO, B.F. (Alma-Ata)

"Hydrodynamics and heat transfer in the annular canal with  
an inner rotating cylinder"

report presented at the 2nd All-Union Congress on Theoretical  
and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

VULIS, L. A. (Leningrad); KARELIN, V. Ye; PALATNIK, I. B.; SAKIPOV, Z.;  
USTIMENKO, B. P. (Alma-Ata)

"Laws of propagation of turbulent compressible gas jets"

report presented at the 2nd All-Union Congress on Theoretical and Applied  
Mechanics, Moscow, 29 Jan - 5 Feb 1964.

ACCESSION NO: AP4.434

ACCESSION NO: 1P4.434

AUTHORS: Ibragimov, I. I.: Onufrienko, B. P.

TITLE: Experimental investigation of axially symmetrical semi-bounded jet in an accompanying stream

SOURCE: AN KazSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 2, 1964, 87-95 A

TOPIC TAGS: flow kinetics, qa; jet, wall effect

**ABSTRACT:** The research reported is part of an investigation of the aerodynamics of semi-bounded wall jets, carried out at the heat-physics laboratory of the Kazakhstan nauchno-issledovatel'skiy institut (KazNII) in Almaty. The main purpose of the experimental results, obtained by the authors, is to study the effect of the boundary conditions on the flow field. The authors have obtained an accompanying film of the flow field, which was produced for the purpose of desirability. The main result was produced and will be

Card 1/3

L 17679-65

ACCESSION NR: AP4049400

rod 45 mm in diameter and 1.5 meter long by means of a fan, a turbulizer, and an annular slot. Another fan and turbulizer produced the uniform accompanying stream. The pressure was measured with a pitot tube that could be moved in three dimensions. The stream velocity ranged from 0 to 17.0 m/sec, the jet velocity from 28.6 to 47.9 m/sec, and their ratio  $m$  ranged from 0 to 0.625. Measurements were made of the distribution of turbulent friction and of the momentum transfer coefficient over the entire range of  $m$ . The results demonstrated the self-similarity of the velocity profiles in the transverse sections of the jet and along the jet, for fixed values of  $m$ . It is shown that, unlike free jets, an increase in the parameter  $m$  accelerates the damping of the wall jet. It is concluded that further study is needed of the turbulent structure of the stream under thermodynamic conditions and the formulation of a physically valid computational procedure. Orig. art. has: 6 figures, 8 formulas, and 1 table.

Card 2/3

L 176"9-65'

ACCESSION NR: AP4049400

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: ME

MR REF SOV: 005

OTHER: 003

Card 3/3

ACCESSION NR: AP4039226

S/0031/64/000/004/0083/0089

AUTHORS: Ibragimov, I. I.; Uatimenko, B. P.

TITLE: Experimental investigations of axisymmetric semi-infinite jet in wake flow

SOURCE: AN KazSSR. Vestnik, no. 4, 1964, 83-89

TOPIC TAGS: jet aerodynamics, pitot probe, concentric nozzle, wake flow, turbulent jet, friction coefficient, velocity profile, axisymmetric jet

ABSTRACT: An experimental investigation has been conducted on semi-infinite jet aerodynamics in the Thermophysics Laboratories at the Khazakh Scientific Research Institute of Power Engineering. The study involved the turbulent jet generated along cylindrical walls in wake flow. The experimental equipment consisted of two concentric nozzles with the jet issuing from a circular slit along cylindrical rods coaxial with the nozzle walls. Profile measurements were made using pitot probes. The results are represented graphically in terms of excess velocity,  $u - u_{\text{flow}}$ , profiles, both transverse and longitudinal in the jet for various parameters  $m = u_{\text{flow}}/u_{\text{jet}}$ . From two-dimensional hydrodynamic considerations an expression is derived for the turbulent friction coefficient in the semi-infinite jet for a

Card 1/2

ACCESSION NR: AP4039226

velocity profile given by  $u/u_m = 1.16 \varphi^{1.16} e^{-1.47\varphi}$ , where  $\varphi = \frac{y}{ax^2}$ . The results show that increasing  $m$  has the effect of increasing the jet decay rate. Orig. art. has 8 formulas and 4 figures.

ASSOCIATION: Laboratoriya teplofiziki Kazakhskogo nauchno - issledovatel'skogo instituta energetiki (Thermophysics Laboratory at the Kazakh Scientific Research Institute of Power Engineering)

SUBMITTED: 00

DATE ACQ: 05Jun64

ENCL: 00

SUB CODE: ME

NO REF Sov: 006

OTHER: 003

Card 2/2

ACCESSION NR: AP4043406

S/0031/64/000/0C7/0051/0057

AUTHORS: Nusupbekova, D. A.; Ustimenko, B. P.

TITLE: Calculation of laminar convectional heat exchange in a flat curved channel

SOURCE: AN KazSSR. Vostnik, no. 7, 1964, 51-57

TOPIC TAGS: Nusselt number, heat exchange, Reynolds number, channel flow, heat transfer coefficient

ABSTRACT: The study of mathematically precise equations for theoretical consideration of laminar convectional heat exchange in variously curved channels explains the mechanics of the process and requirements for laminar flow. The hydrodynamics and heat exchange of an incompressible liquid in a laminar current were treated for different relative heat fluxes in the channel walls. Centrifugal force played a role in all cases except the limiting one where the curvature  $R =$

$\frac{r_2}{r_1}$  ( $r_1, r_2$  are the radii of the channel walls) was 1, which is the limiting condition (a flat, straight channel). The speed distribution for a constant  $\text{Card } 1/2$

ACCESSION NR: AP4043406

flow with varying curvatures was plotted, and the speed maximum was found to shift toward the inner channel wall as  $R$  increased. The resistance coefficient (drag)  $\xi$  was determined, and its value in the limiting condition  $R = 1$  agreed with the usual value for resistance in a straight channel.  $\xi$  was plotted for various Reynolds numbers and curvatures and was found to increase with higher  $R_s$ . Using the thermoconductive coefficient, the heat flux at the walls, energy balance, average flow value of the temperature excess, and boundary conditions, the temperature profile and heat transfer coefficients were calculated. Nusselt numbers were calculated for the inner and outer walls, using heat transfer coefficients. In both curved and straight channels the distribution of the dimensionless excess temperature was plotted for different values of relative heat fluxes. With a growth of the relative heat fluxes the temperature extreme shifted to the wall having the lesser heat flow.  $R$ 's effect on the temperature profile showed the temperature extreme shifted toward the inner wall as  $R$  increased. The dependence of the Nusselt numbers for straight and curved channels was plotted as a function of the heat flow and  $R$ , and it was found to be qualitatively similar for all  $R$ . Orig. art. has: 4 figures and 21 equations.

ASSOCIATION: none

SUBMITTED: 00

SUB CODE: MA,TD  
Card 2/2

NO REF SOV: 003

ENCL: 00

OTHER: 002

ACCESSION NR: AP4038440

S/0294/64/002/002/0250/0259

AUTHORS: Ustimenko, B. P.; Zmeykov, V. N.

TITLE: Hydrodynamics of flow in an annular channel with an internal rotating cylinder

SOURCE: Teplofizika vysokikh temperatur, v. 2, no. 2, 1964, 250-259

TOPIC TAGS: turbulent liquid flow, vortex effect, flow through annular channel, Reynolds number, velocity distribution, heat flow

ABSTRACT: In view of the lack of systematic and reliable data on the structure of vortical streams, and particularly their turbulent structure, an investigation was made of the hydrodynamics of a circular stream of incompressible liquid in a closed annular channel with an internal rotating cylinder. The setup consisted of two coaxial balanced metallic cylinders producing an annular channel 310 mm o.d., 212 mm i.d., and 400 mm long. The inside cylinder was ro-

Card 1/4

ACCESSION NR: AP4038440

tated relative to the outer cylinder by a motor ( $2700 \pm 10$  rpm), and the outer cylinder was kept at a constant temperature with a water jacket. The measurement procedure is described and data on the velocity profiles, the static pressure, and the tangential friction stress are given in detail for different flow conditions and for a Reynolds number range  $10^4 \leq Re \leq 10^5$ . A generalized velocity profile, which coincides in the near-wall region with the logarithmic profile customarily obtained in flow over flat smooth surfaces, is obtained also for this case. Asymptotic formulas are then derived for the velocity distribution and for the resistance coefficient; these are valid for large values of the dynamic Reynolds number  $Re^+$ . Data on the turbulent microstructure of the stream and on the heat flow will be reported in later papers. "The authors are grateful to Professor L. A. Vulis for a discussion of the results and for valuable advice. Orig. art. has: 6 figures, 21 formulas, and 1 table.

Card 2/4

ACCESSION NR: AP4038440

ASSOCIATION: Institut energetiki Akademii nauk KazSSR (Institute of Power Engineering, Academy of Sciences, KazSSR)

SUBMITTED: 27Apr63 DATE ACQ: 09Jun64 ENCL: 01

SUB CODE: ME NR REF SOV: 005 OTHER: 006

Card 3/4

ACCESSION NR: AP4038440

## Summary of data on flow conditions prevailing in the experiments

ENCLOSURE: 01

1	2	3	4
1	500	5,54	
2	700	7,76	
3	1000	11,10	
4	1200	13,32	
5	1500	16,65	
6	1700	18,88	
7	2000	22,20	
8	2200	24,40	
9	2500	27,75	
10	2700	30,00	

1 - serial no. 2 - n, rpm, 3 -  $u_1$ , m/sec, 4 - tangential  
 friction stress on the stationary wall,  $\text{kg/m}^2$  (force)

Card 4/4

IBRAGIMOV, I.I.; USTIMENKO, B.P.

Experimental investigation of an axisymmetric wall jet in the  
wake flow. Vest. AN Kazakh. SSR 20 no.4:83-89 Ap '64.  
(MIRA 17:7)

NUSUPBEKOVA, D.A.; USTIMENKO, B.P.

Calculation of laminar convective heat exchange in a flat curvi-linear channel. Vest. AN Kazakh. SSR 20 no.7:51-57 J1 '64.  
(MIRA 17:11)

1. ~~Approved~~ ~~Confidential~~ ~~Do not forward~~ ~~Do not copy~~ ~~Do not forward~~

2. ~~Approved~~ ~~Confidential~~ ~~Do not forward~~ ~~Do not copy~~ ~~Do not forward~~  
ACCESSION NR AP 049164

3. ~~Approved~~ ~~Confidential~~ ~~Do not forward~~ ~~Do not copy~~ ~~Do not forward~~  
100-31844-10-3-00000-0074

AUTHOR: Ustimenko, B. P. (Candidate of technical sciences)

TITLE: Calculation of free strongly-vortical turbulent jets by the equivalent problem of the heat conduction theory

SOURCE: AN KazSSR. Vestnik, no. 10, 1964, 69-74

TOPIC TAGS: turbulent flow, turbulent vortex flow, turbulent jet

ABSTRACT: The proposed method for calculating the aerodynamics of free, strongly-vortical turbulent jets is based on reducing the non-linear equations of the free turbulent boundary layer to equivalent heat conduction equations. This method permits an approximate calculation of the continuous deformation of the initial velocity profile over the entire region of propagation of a strongly vortical, turbulent jet, including the region of reverse flows. The total pressure and total potential are calculated in terms of the solution of the equivalent problem of the heat conduction theory. The method is compared with previously published experimental data. There are 2 figures and 9 formulas.

Card 1/2

L 15139-65

ACCESSION NR: AP4049164

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: NE

NO REF SOV: 009 OTHER: 002

Card 2/2

1. REPORT DATE: 02-07-1986 2. DOCUMENT IDENTIFICATION:

ACCESSION NR. A15011468

C 049 64 00 00 0023 0182

AUTHOR: Chapman, M. M. (Michael M. Chapman) P. D.

TITLE: Stability of annular channel flow between rotating cylinders

SOURCE: Alma-Ata, Kazakstan: nauchno-tekhnicheskii institut po radio-

TOPIC TAGS: annual channel flow, turbulent annular flow, thermocapillary instabilities, annual flow, boundary instabilities, annual flow temperature distribution, annual flow selfsimilarity

ABSTRACT: The turbulent structure of the flow within an annular channel between rotating cylinders is quite unknown. There are only purely qualitative descriptions of the instabilities and some attempts to calculate the interaction force.

Card 1/2

L 52276-65

ACCESSION NR: AT5011668

(mean square pulsations) of the velocity components, temperatures, and correlations  
of the flow field in the wake of a transonic airfoil. The differences  
between the results obtained by the present method and the results obtained by the  
standard method of solution are discussed.

L 57785-65  
Pa-4/Pu-4

EPF(m)/EPF(c)/EPF(n)-2/EPR/EWT(1)/FCS(k)/EWG(m) Pd-1/Fr-4/

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UR/0285/85/000/005/0014/0014  
621.438.001.5

ACCESSION NR: AR5014260

40

B

SOURCE: Ref. zh. Turbostroyeniye. Otdel'nyy vypusk, Abs. 5.49.97

AUTHOR: Zmeykov, V. N.; Ustimenko, B. P.

TITLE: A study of aerodynamics and heat exchange in a circular channel with an  
internal rotating cylinder

21

CITED SOURCE: Sb. Probl. teploenerg. i prikl. teplofiz. Vyp. 1. Alma-Ata, An  
KazSSR, 1964, 148-172

TOPIC TAGS: circular channel, internal rotating cylinder, heat exchange, aerodynamics,  
gas turbine

TRANSLATION: The report cites detailed experimental data on the velocity and temperature profiles, friction and heat transfer in a circular channel with an internal rotating cylinder. New formulas are given describing the friction factor and velocity profiles. The report presents a method for calculating heat transfer based on employing the hydrodynamic theory of boundary layers. The results of calculations

Card 1/2

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ACCESSION NR: AR5014260

are compared with test data. The experimental work was carried out on a stand consisting of a stationary external cylinder with  $\varnothing = 400$  mm and an internal rotating cylinder with  $\varnothing = 212$  mm. The velocity of rotation ranged from 0 to 2700 rpm. The rotating cylinder contained an electrical heater, while the external sleeve was

cooling cylinder. Author: I. Dorfman.

ENCL: 00

SUB CODE: PR, TD

b7c  
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Card

L 52275-65 ENT(1)/EFP(m)/EFP(c)/EFP(n)-2/EVO(m)/EWA(d)/EPR/FGS(k)/EWA(1)

Pd-1/Pt-4/Ps-4/ Pu-4

ACCESSION NR: AT5011667

UR/3149/64/000/001/0148/0172

33  
72

AUTHOR: Zmeykov, V. N., Ustimenko, B. V.

TITLE: "The dynamics of vortex annular flow in a channel with a moving boundary." (Russian)

SOURCE: Alma-Ata. Kazakhskiy nauchno-issledovatel'skiy institut energetiki, Pro-

gram "Vortex flow".

TOPIC TAGS: annular channel flow, vortex annular flow, annular flow aerodynamics, annular flow heat exchange

ABSTRACT: In spite of numerous articles on vortex flows (see, e.g., I. S. Blorklund, W. M. Kaus, Trans. ASME, Series C, v. 81, no. 3, 1959; S. I. Kosterin, Yu. P. Finat'yev, Inzhenerno-fizicheskiy zhurnal, 1962, no. 8), the aerodynamics and heat exchange properties of such flows are still quite unknown. Consequently, no aimed experiments have been aimed at the investigation of the hydrodynamic and heat transfer properties together with the intensity of heat transfer in an annular channel between an outer stationary and inner moving boundary. After describing the experimental setup, measurement procedures, and the method used by the authors for the calculation of the hydrodynamic and heat transfer characteristics, the authors present the results of the investigation of the dynamics of the vortex flow in

Card 1/2

L 52275-65

ACCESSION NR: AT5011567

good agreement with the newly-developed equations. Experimental temperature profiles and the Nu criteria generally followed the theoretical curves given by various authors (Fujio Iachibana, *et al.*, Bulletin of ISME, V. 1, no. 1, 1961, Faculty of Engg., Univ. of Tokyo, Japan; ISME, *Journal of Translation to Teoploperedacha*, 1962, no. 2).

## ASSOCIATION: NOTE

NO REF SOC: 009 TIME: 1: 009

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R001858220003-2"

ZHURAVLEV, I. A.; M. M. MOKO, B. F.

On drawing the laminar and turbulent heat transfer in hydrointegrator  
tubes. Friction coefficient. L prib. Izp. fiz. no. 1230-445 '64.  
(MIRA 18:3)

L-13554-66 EWT(1)/ETC(F),EPF(n)-2/EWG(m) WW/08

ACC NR: AT6001358

SOURCE CODE: UR/0000/65/000/000/0116/0130

AUTHOR: Ustimenko, B. P.; Zhurgembayev, K. A.; Nusupbekova, D. A.ORG: Institute of power engineering, AN KazSSR (Institut energetiki, AN KazSSR)TITLE: Calculation of the convective heat transfer of an incompressible liquid in intricate-shaped channelsSOURCE: Teplo- i massoperenos. t. 1: Konvektivnyy teploobmen v odnorodnoy srede (Heat and mass transfer. v. 1: Convective heat exchange in a homogeneous medium). Minsk, Nauka i tekhnika, 1965, 116-130

TOPIC TAGS: heat transfer, turbulent heat transfer, convective heat transfer, thermodynamics

ABSTRACT: Results are presented of the calculations of the resistance and heat transfer in the laminar flow of an incompressible viscous liquid in plane rectilinear and curvilinear channels for various ratios of the heat fluxes on the channel walls. Approximate calculations are also given for turbulent convective heat transfer in channels using a hydrodynamic integrator. The results indicate that as the ratio of the heat fluxes on the walls increases, the maximum of the temperature profile shifts toward the wall having the smaller heat flux. In the case of the laminar circular flow, the dimensionless temperature maximum shifts toward the side of the interior wall as the curvature parameter  $m$  increases. Formulas for calculating the Nusselt num-

Card 1/2

L 13554-66

ACC NR: AT6001358

ber are given and curves showing the comparative results of the experimental and theoretical heat transfer calculations are also presented. These results compared quite favorably and thus confirm that a hydrointegrator may be used to compute turbulent convective heat transfer in various intricate-shaped channels. [TN]

SUB CODE: 20/ SUBM DATE: 31Aug65/ ORIG REF: 002/ OTH REF: 005/ ATD PRESS:  
4185

Card. 2/2

L 11861-66 EWT(1)/EWP(m)/ETC(F)/EPF(n)-2/EWG(m)/EWA(d)/ETC(m)/EWA(i) Ww/GS

ACC NR: AT6001361

SOURCE CODE: UR/0000/65/000/000/0148/0163

AUTHOR: Zmeykov, V. N.; Ustimenko, B. P.

ORG: Energetics Research Institute AN KazSSR (Nauchno-issledovatel'skiy institut energetiki AN KazSSR)

TITLE: Hydrodynamics and heat transfer for a twisted flow between coaxial cylinders

SOURCE: Teplo- i massoparenos. t. 1: Konvektivnyy teploobmen v odnorodnoy srede (Heat and mass transfer. v. 1: Convective heat exchange in an homogeneous medium). Minsk, Nauka i tekhnika, 1965, 148-163

TOPIC TAGS: hydrodynamics, convective heat transfer, fluid flow, Nusselt number

ABSTRACT: The article presents the results of an investigation of hydrodynamics and heat transfer in an annular channel with an inner rotating cylinder. It gives detailed experimental data on the distribution of the velocity, temperature, and pulsation characteristics of the flow. It proposes a scheme for calculation of heat transfer, based on application of hydrodynamic theory and new formulas describing the velocity profile and the resistance coefficient. The experimental

Card 1/2

L 11861-66

ACC NR: AT6001361

apparatus consisted of two carefully balanced coaxial metal cylinders, the inner one of which was set into rotation by a direct current method. The angular velocity could be regulated by a rheostat up to 283 radians/sec, with an accuracy of  $\pm 1$  radian/sec. The channel formed was 0.4 meters long and 0.0049 in thickness and the diameter of the inner cylinder was 0.212 meters. A table shows detailed operating conditions for all the experiments. Based on the experimental results, a figure shows the universal profile of the dimensionless velocity, and a further curve exhibits the Nusselt number as a function of the modified Taylor number. The article proceeds to an analysis of the turbulent structure of the flow in the annular channel with a rotating inner cylinder. A final curve shows the distribution of the pulsation rate. Orig. art. has: 19 formulas, 5 figures, and 3 tables.

SUB CODE: 20/ SUBM DATE: 31Aug65/ ORIG REF: 005/ OTH REF: 009

HW  
Card 2/2

L 39537-66 EWT(1)/EWP(m)/EWT(m)/ETC(f)/EPF(n)-2/EWG(m)/EWA1011  
 ACC NR: AT6006926 JWD/WE/GS SOURCE CODE: UR/0000/65/000/000/03921  
 AUTHOR: Karelina, V. Ye.; Palatnik, I. B.; Untimenko, B. P.

ORG: Power Engineering Institute, AN KazSSR (Institut energetiki AN KazSSR)

TITLE: Study of heat and momentum transfer processes in a compressible turbulent jet  
 in a cocurrent uniform flow

SOURCE: Teplo- i massoperenos. t. II: Teplo- i massoperenos pri vzaimodeystvii tel s  
 potokami zhidkostey i gazov (Heat and mass transfer. v. 2: Heat and mass transfer in  
 the interaction of bodies with liquid and gas flows). Minsk, Nauka i tekhnika, 1965,  
 399-406

TOPIC TAGS: heat transfer, jet, combustion

ABSTRACT: The aerodynamics and heat transfer in nonisothermal cocurrent jets are  
 important for the intensification of combustion processes. A comprehensive program  
 to study this problem was conducted at the Kazakh Scientific Institute in 1962-1963. The experiments were carried out in a wind tunnel with a test  
 section 0.6 m in diameter. The jet was preheated by passage through a combustion  
 chamber in which butane-propane was burned. The jet was then injected into the test  
 section through a nozzle 0.05 m in diameter. The velocity of the cocurrent air stream  
 in the test section was varied between 10 and 20 m/sec to obtain ratios of the

Card 1/2

L 24348-66 EWT(1)/ENP(m)/T-2/EWA(1) WW/JXT(CZ)  
ACC NR: AT6006423

SOURCE CODE: UR/3149/65/000/002/0165/0172

AUTHOR: Ibragimov, I. I.; Ustimenko, B. P.

ORG: None

53  
52  
B+1

TITLE: Investigation of the aerodynamics of a rotational jet along a cylindrical wall in a secondary flow

SOURCE: Alma-Ata, Kazakhskiy nauchno-issledovatel'skiy institut energetiki. Problemy teploenergetiki i prikladnoy teplofiziki, no. 2, 1965, 165-172

TOPIC TAGS: secondary flow, fluid flow, flow analysis, rotational flow, nozzle flow

ABSTRACT: The authors present results of an experimental investigation of the aero-dynamics of a turbulent rotational jet flowing along a cylindrical wall in a secondary flow. This work is a part of the aerodynamic investigations of a semi-boundary layer flow conducted at Thermal Physics Laboratory, Kazakh Scientific-Research Institute of Power Engineering (laboratoriya teplofiziki Kazakhskogo nauchno-issledovatel'skogo instituta energetiki). The data obtained are compared with data for nonrotational jets. The jets were studied at different values of the parameters  $m$  and  $n$  ( $0 \leq m \leq 0.4$ ;  $0.086 \leq n \leq 0.31$ ). The cylindrical rod was 45 mm in diameter and the nozzle was 2.5 mm wide. A self-similarity of the velocities profiles and static pressures was obtained for the parameters

2

L 24348-66

ACC NR: AT6006423

m and n studied. The existence of similarity between the profile of axial and the tangential velocity components is shown. It is established that the existence of jet rotation leads to a faster damping of the jet. The boundaries of the rotational jet are appreciably wider than those of the nonrotational jet at identical values of the parameter m. The effect of the parameters m and n on the pattern of jet flow is analyzed. The conclusions obtained should be checked in an apparatus with a wider nozzle in order to exclude the scale effect. The fundamental aims of further investigations of the flow under investigation is the study of its turbulent structure, heat transfer processes, and a development of methods of calculation. Authors express their gratitude to S. I. Isatayev who recommended the employment of a solution used in the measurements. Orig. art. has: 5 figures and 1 table.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 005

Card 2/2 *pls*

L 24349-66 EWT(1)/EWP(m)/EWA(d)/ETC(m)-6/EWA(1) WW/JXT(CZ)

ACC NR: AT6006424

SOURCE CODE: UR/3149/65/000/002/0173/0178

AUTHOR: Kel'manson, I. A.; Ustimenko, B. P.

ORG: None

54  
R+1

TITLE: Solution of problems on the propagation of rotational jets by the integral method

SOURCE: Alma-Ata. Kazakhskiy nauchno-issledovatel'skiy institut energetiki. Problemy teploenergetiki i prikladnoy teplofiziki, no. 2, 1965, 173-178

TOPIC TAGS: rotational flow, fluid flow, flow propagation, homogeneous flow, jet flow

ABSTRACT: The fluid flow mechanism in rotational jets is the object of widespread interest, due to its extensive application in furnace technology, gas turbine combustion chambers, etc. The theoretical solutions available pertain to slightly rotational jets, the distinguishing feature of which is the absence of reverse currents. Some investigators construct the solution by the method of series expansion, others construct self-similar solutions. Highly rotational jets offer the greatest practical interest, but have not been studied theoretically. Furthermore, very few studies have been devoted to the problems

Card 1/2

L 24349-66

ACC NR: AT6006424

of the propagation of compressible rotational jets, particularly the mechanisms of the propagation of turbulent rotational jets, where no reliable data exist on the propagation of the transfer coefficients and the shearing friction stress. In view of this, it is of considerable interest to obtain new theoretical and experimental data on the study of rotational jets. The present article presents the solution to the problem of propagation of a free, inundated, rotational jet and a rotational jet in a secondary homogeneous flow. The solution is constructed by the integral method. The results of the calculations are compared with solutions found in the literature. Orig. art. has: 5 figures and 9 formulas.

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 008 / OTH REF: 001

Card 2/2 *sls*

L 23522-66 EWP(m)/EPF(n)-2/EWT(l)/ETC(m)-6/ETC(f)/EWG(m)/EWA(l)/EWP(v) WW/HM

ACC NR: AP6004980

SOURCE CODE: UR/0031/66/000/001/0047/0054

AUTHOR: Nusupbekova, D. A.; Ustimenko, B. P.

68

ORG: none

B

TITLE: Investigation of heat transfer in the turbulent flow of a fluid in a flat curvilinear channel

SOURCE: AN KazSSR, Vestnik, no. 1, 1966, 47-54

TOPIC TAGS: convective heat transfer, turbulent flow, fluid flow, hydraulics, Nusselt number, Reynolds number

ABSTRACT: The experimental measurements were made in a channel with a mean radius of curvature of 215 mm. The walls of the channel were 30 mm apart and had a height of 300 mm. The ratio of the external and internal radii was 1.15. The temperature of the walls was maintained constant by independent cooling water jackets. The experimental error in determination of the temperature profile and the Nusselt number was not greater than 1 and 10%, respectively. The Reynolds number, calculated with respect to the equivalent diameter, was varied between 50,000 and 178,000. The wall temperature was held constant and, in different experiments, was between 20-25°. The temperature difference between the

Card 1/2

L 23522-66

ACC NR: AP6004980

walls of the channel and the flow was selected in the interval 60-90°C. The experimental results are presented graphically. They include detailed data on the temperature profiles and the heat transfer coefficients in the given case. The heat transfer rate in a flat curvilinear channel ( $R = 1.15$ ) was found to be approximately 20-25% higher than in flat and round straight tubes. The heat transfer coefficients to the outer wall were found to be substantially higher (about 2 times) than those to the inner wall. The heat transfer was calculated by application of the hydraulic theory of heat transfer to fully developed flow in a flat curvilinear channel. The formulas obtained are claimed to agree well with the experimental data. Orig. art. has: 18 formulas and 3 figures.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 005/ OTH REF: 004

Card 2/2-90

L 36857-66 EWP(m)/EWT(l)/EWT(m)

ACC NR: AT6023751

SOURCE CODE: UR/3149/66/000/003/0135/0147

AUTHOR: Ustimenko, B. P.; Ibragimov, I. I.

59

ORG: none

B+1

TITLE: Calculation of the aerodynamics of turbulent, swirling jets  
developing along a cylindrical wall in a cocurrent flowSOURCE: Alma-Ata. Kazakhskiy nauchno-issledovatel'skiy institut  
energetiki. Problemy teploenergetiki i prikladnoy teplofiziki, no. 3,  
1966, 135-147TOPIC TAGS: incompressible liquid, turbulent jet, jet aerodynamics,  
jet flow, TURBULENT FLOW, AERODYNAMICS

ABSTRACT: Equations are derived and solved for calculating the aerodynamics of turbulent, semiconfined swirling flows of an incompressible liquid propagating along a cylindrical rod. The following two cases are considered: 1) a submerged, swirling turbulent jet propagating along a cylindrical wall; and 2) a swirling turbulent jet propagating along a cylindrical wall in a cocurrent flow (see Fig. 1). The

Card 1/2

L 36857-66

ACC NR. AT6023751

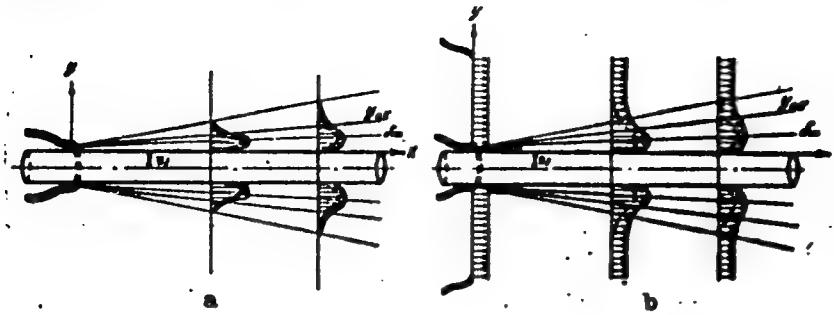


Fig. 1. Flow diagram

a - Submerged turbulent, swirling, semiconfined jet;  
b - turbulent, swirling, semiconfined jet in a cocurrent flow.

dimensionless axial and tangential velocity profiles calculated by the derived equations are in close agreement with published experimental data. Orig. art. has: 7 figures and 44 formulas. [P8]

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 006/ OTH REF: 001  
ATD PRESS: 5040

me  
Card 2/2

OTRSPL, Vol. 5, No.1

Kalinin, F.L., Ustimenko, E.S. and Okanenko, A. S. (Institute of Plant Physiology and Agrochemistry, Ukrainian S.S.R. Academy of Sciences), The character of the action of extracts from aloe leaves on the growth and development of plants, 145-8

Akademiya Nauk, S S.S.R., Doklady, vol. 78, no.1

3,1220 (1051,1114,1057)

29574  
S/033/61/038/004/010/010  
E133/E135AUTHORS: Latypov, A. A., and Ustimenko, F. G.

TITLE: The utilization of a quartz generator and the synchronous motor from a printing chronograph as a clock mechanism for parallactic mountings

PERIODICAL: Astronomicheskiy zhurnal, vol. 38, no. 4, 1961, 772-773

TEXT: Photography with telescopes of long focal length involves frequent positional corrections. This is due to a variety of reasons, e.g. periodic errors in the driving mechanism, differential refraction, etc. The normal astrograph of the Tashkent Astronomical Observatory (diameter 330 mm, focal length 3463 mm) was built at the end of the last century. It has the normal type of gear mechanism without a second control. It can, however, be regulated by means of a conical pendulum, but this arrangement does not seem to work very well. Therefore, the authors have tried using the mechanism of an electric chronograph (measuring time intervals to an accuracy of 0.005 sec). This chronograph consists of a synchronous motor fed by a frequency-stabilized current. Stabilization is by means of a quartz

X

Card 1/2

29574

The utilization of a quartz generator... S/033/61/038/004/010/010  
E133/E135

generator working at 50 c/s and 110, 127 or 220 V. The  
chronograph motor does 3000 r.p.m. This is reduced by four gear  
wheels to 60 r.p.m. and is transmitted to the worm gear. The  
layout is shown in Fig. 1. The arrangement has been in use for  
six months and has been found very convenient. The telescope  
position only requires readjustment every 8-10 minutes now.  
There is 1 figure. *X*

ASSOCIATION: Tashkentskaya astronomicheskaya observatoriya  
Akademii nauk UzSSR  
(Tashkent Astronomical Observatory, AS Uz.SSR)

SUBMITTED: November 23, 1960

Card 2/2

USTIMENKO, G.V., aspirant, kand. nauk.

Growth and development of various types of Jerusalem artichokes,  
sunflowers and their hybrids. Dokl. TSKhA no.28:203-209 '57.  
(Jerusalem artichoke) (Sunflowers) (MIRA 11:4)

Journal : Ref Zhur - Biologiya, No 2, 1959, No. 6273  
 Author : Ustimenko, G. V.  
 Title : Not given  
 Abstract : Seed Cultivation of Jerusalem Artichokes in the Central Rayons of the Non-Chernozem Belt

Abstract : According to tests carried out during experiments conducted at the Timiryazev Agricultural Academy field station, the most productive varieties and forms of Jerusalem artichoke were: Belya Urozhaynaya, Saratovskaya, Hybrid 120 and Vadim. Liquid manure spread over the sprouts in doses of 10 t/ha spread seed field used for three years increased a yield of tubers by 30%. It is preferable to

44

Card 1/3

APPROVED FOR RELEASE: 04/03/2001

Journal : Ref Zhur - Biologiya, No 2, 1959, No. 6273  
 Title : Potatoes, Vegetables, Melons. M-2

harvest the tubers in order to get seeds in the spring, because in this case, their yield increases by 15 - 20%. The above-ground mass of the Jerusalem artichokes is cut on the seed plots before the start of frost. The Vadim and Saratovskaya varieties from the industrial point of view are the most interesting with regard to the central regions of the non-chernozem belt, because they produce comparatively high yields of green mass and tubers and they hibernate satisfactorily. The propagation of Jerusalem artichokes can also be effected by accelerated means. To obtain this, buds, weighing 2 - 3 g, are cut away from large tubers and planted in hothouses or in peat compost blocks. After 20 - 25 days, when the

Card 2/3

45

USTIMENKO, G.V., kand. sel'skokhozyaystvennykh nauk

Principal results obtained in investigating Jerusalem artichoke  
cultivation [with summary in English]. Izv. TSKhA no.5:56-63 '60.  
(Jerusalem artichoke)

(MIRA 13:11)

USTIMENKO, I.L.

DESYATCHIKOV, Boris Antonovich; USTIMENKO, I.L., red.; BAKHTIYAROV, A.,  
tekhn.red.

[Electrification of Soviet Uzbekistan] Elektrifikatsiya Sovetskogo  
Uzbekistana. Tashkent, Gos. izd-vo Uznekskoi SSR, 1957. 131 p.  
(Uzbekistan--Electrification)